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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/391,943	09/08/1999	NAGAAKI OHYAMA	990544/LH	9366

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EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2612

13

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/391,943	OHYAMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason T. Whipkey	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 09 April 2004.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-3,6,9-12,14-16 and 28-39 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-3,6,9-12,14-16 and 28-39 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 09 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground of rejection.

***Drawings***

2. Replacement drawings were received on April 9, 2004. These drawings are approved and the corresponding objections are withdrawn.

***Specification***

3. The amendment to the specification is approved and the corresponding objections are withdrawn.

***Claim Objections***

4. The amendment to the claims to overcome the objections thereto are approved and the corresponding objections are withdrawn.

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5. Claim 1 is objected to as failing to comply with 37 CFR 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation “said image processing unit” on line 6. There is insufficient antecedent basis for this limitation in the claim. For examination purposes, the claim will be treated as if it reads, “said image processing apparatus”.

6. Claim 32 is objected to because of an informality. The claim should be amended to read -- An image processing apparatus -- rather than “An image processing, apparatus”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The amendment to the claims has successfully overcome the rejection under 35 U.S.C. § 112, second paragraph. This rejection is withdrawn.

***Double Patenting***

8. The amendment to the claims has successfully overcome the double patenting rejection. The double patenting rejection has therefore been withdrawn.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1, 2, 10, 14, 28-30, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama (Japanese Patent Application Publication No. 09-172649) in view of Hidaka (U.S. Patent No. 6,240,204).

Regarding claim 1, Ooyama discloses a photographic system with spectrum picture photography means 10 (“an image input apparatus”) for capturing a photographic subject (“an object”) (page 4, lines 22-23 of the provided machine translation). Processing means 30 (“a reproducing environment converting unit”) measures lighting data (“photographing illumination spectrum information”) captured by light spectrum detection means 20 on the photographing side

of the system (page 4, lines 25-30). Processing means 30 also detects (“observing object feel-of-material information”) and measures (“observing illumination spectrum information”) the lighting spectrum on the reproduction side of the system (page 5, lines 33-34).

Ooyama is silent with regard to measuring photographing object feel-of-material information.

Hidaka discloses an imaging system that measures the lighting conditions at image pickup and image reproduction locations, as shown in Figure 9. The system uses angle sensor 608 to measure the direction of photographing light captured by ambient light sensor 607 (column 9, lines 55-64). As stated in column 10, lines 12-16, an advantage to using an angle sensor is that the image processor may more accurately calculate the light viewed by the observer. For this reason, it would have been obvious at the time of invention to have Ooyama’s system measure the direction of photographing light captured by the light spectrum detection means.

Regarding claims 2 and 28, Ooyama teaches that in step S60a, processor 60 uses color translation table 68 to produce an image signal appropriate for the spectral characteristic (“information on the image output apparatus”) of display 90 (page 12, lines 35-41, and page 20, line 17).

Regarding claim 10, Ooyama teaches that computing element 35 (“a reproducing environment-variable image data producing unit”) performs and applies calculations to the image data (“reproducing environment-variable image data”) based on the lighting detected on the photographing side of the system (page 9, lines 22-28). As shown in Drawing 3, the data is transmitted over a communication line (“a network”) through communication-interface

equipment 40 and 45 (“data transmitting means”) (page 6, lines 39-40). Processor 60 (“a reproducing environment-variable image data processing unit”) modifies the received image data in accordance with the lighting detected on the reproducing side of the system (page 6, lines 41-46).

Regarding claim 14, Ooyama teaches that the image is captured by a single multi-spectrum camera 10 (page 6, lines 18-19).

Regarding claims 29 and 30, Hidaka’s system, as described in the rejection of claim 1, measures the angle of the light shining on the photographing side of the system.

Regarding claims 32 and 33, Ooyama’s system, as described in the rejection of claim 1, detects (“information on a form of illuminating light”) and measures lighting spectrum on the reproduction side.

12. Claims 3, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama in view of Hidaka and further in view of Minami (U.S. Patent No. 6,014,472).

Claim 3 and 6 may be treated like claim 1. However, Ooyama is silent with regard to including an object position information determining unit.

Minami discloses an image processing device that produces shadows associated with an object captured in an inputted video signal. A two-dimensional form of the video signal is produced by shadow signal producing section 20 (“an object position converting unit”) (column 4, lines 21-37). The position of the object selected by the operator (“object position information”) and used to calculate the location of shadows (column 30, line 46, through column 31, line 28).

An advantage to producing a video signal of an object relocated at a desired position is that the position of a subject may be improved without the expense of re-shooting the scene. For this reason, it would have been obvious at the time of invention to have Ooyama's system include the virtual light positioning system described by Minami.

Regarding claim 9, Ooyama teaches that processor 30 includes interpolator 32 for outputting data to spectrum memory 33, which collects the data ("an image composing and interpolating unit") (page 7, lines 37-39).

13. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama in view of Hidaka and further in view of Jones (U.S. Patent No. 3,564,988).

Claim 11 may be treated like claim 1. However, Ooyama is silent with regard to including a turntable controlled by an image input apparatus for rotating an object.

Jones shows turntable 60 in Figure 1. The turntable controls are incorporated in stationary camera assembly 10 (column 3, lines 28-29). Turntable 60 is rotated relative to camera assembly 10 (column 3, lines 44-45).

An advantage to using a turntable to rotate an object is that a profile of an object may be captured at a variety of angles. For this reason, it would have been obvious at the time of invention to have Ooyama's system include the turntable described by Jones.

Regarding claim 12, Jones teaches that turntable 60 may be both rotated and tilted relative to camera assembly 10 (column 3, lines 44-45).

14. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama in view of Hidaka and further in view of Ishibashi (U.S. Patent No. 6,215,461).

Claim 15 may be treated like claim 1. However, Ooyama is silent with regard to including a head-mounted display.

Ishibashi, as shown in Figure 1, discloses a head-mounted display 2 connected to three-dimensional camera system 1. A stereoscopic image is displayed in the head-mounted display (column 3, lines 14-24).

An advantage to using a head-mounted display is that a more realistic image can be provided to a viewer. For this reason, it would have been obvious at the time of invention to have Ooyama's system include a head-mounted display, such as the one described by Ishibashi.

Regarding claim 16, Ishibashi teaches that gyroscopes 405 and 406 are attached to head-mounted display 2 (column 4, lines 3-5). The gyroscopes detect the movement of the user's head and move camera 1 accordingly (column 4, lines 48-54).

15. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama in view Hidaka and further in view of Sato (U.S. Patent No. 4,794,262).

Claim 31 may be treated like claim 30. However, Ooyama is silent with regard to including point light source applied at a programmed angle.

Sato discloses an apparatus that captures a three-dimensional profile of an object, as shown in Figure 1. Image sensor 10 captures light reflected from the surface of target 4 (column 5, lines 49-53) when the light is aimed at point P (column 6, lines 49-51). The light is moved "according to a predetermined scheme" ("a preset program") (column 3, lines 4-5).

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An advantage to using a movable point light source to capture an image of an object is that detected changes in the reflection of a point light source may be used to determine three-dimensional measurements of the object. For this reason, it would have been obvious at the time of invention to have Ooyama's imaging system include Sato's system for profiling a three-dimensional object.

16. Claims 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooyama in view of Hidaka and further in view of Katayama (U.S. Patent No. 6,256,035).

Claims 34 and 37 may both be treated like claim 1. However, Ooyama is silent with regard to allowing an object to be observed from a desired position or direction.

Katayama discloses an imaging system that includes camera 803 for capturing an image of object 801 on turntable 802, as shown in Figure 8. After the image is captured, the user may enter a point at which to place the "virtual camera" ("object direction information" and "observer position information") (column 5, lines 16-35).

An advantage to producing a video signal of an object relocated at a desired position is that the viewer may obtain more information, as desired, about an object. A viewer can therefore get a more accurate impression of the object. For this reason, it would have been obvious at the time of invention to have Ooyama's system include the virtual camera positioning system described by Katayama.

Regarding claims 35 and 38, Katayama teaches that CPU 102 ("an object direction converting unit" and "an observer position converting unit") performs the virtual camera processing (column 4, lines 3-4).

Regarding claims 36 and 39, Ooyama teaches that processor 30 includes interpolator 32 for outputting data to spectrum memory 33, which collects the data (“an image composing and interpolating unit”) (page 7, lines 37-39).

***Conclusion***

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason T. Whipkey, whose telephone number is (703) 305-1819. The examiner can normally be reached Monday through Friday from 8:30 A.M. to 6:00 P.M. eastern daylight time, alternating Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 16, 2004

  
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